

FLUIDONICS^{T.M.}

DIVISION OF IMPERIAL-EASTMAN CORPORATION

6300 W. HOWARD ST

CHICAGO, ILLINOIS 60648

AREA CODE 312: 774-1700

DESIGN 1/66

. MAY 13, 1966

. T. NELSON
SYSTEMS CONSULTANT
BOX 1546
POUGHKEEPSIE NEW YORK 12603

We appreciate your recent inquiry about FLUIDONICS products, and have enclosed the following material which we hope is of use to you.

. CORNING DATA SHEETS # 6000 THRU # 6013

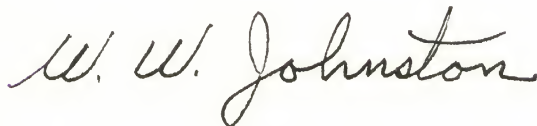
For further information, we have listed below the authorized FLUIDONICS Engineering Specialist in your area. He will be happy to work with you on any technical problems or product requirements you may have.

. MID-HUDSON CONTROLS, INC.
205 DELAWARE AVENUE
DELMAR, NEW YORK 2054

As exclusive distributor of Corning Fluidic Devices, FLUIDONICS can provide fast service from stock on a wide range of fluid amplifiers . . . and the technical assistance needed to best work them into your application. We urge you to call on us whenever you need help in this area. Contact your FLUIDONICS Engineering Specialist, or write, wire, or call us direct.

Sincerely yours,

FLUIDONICS



W. W. Johnston,
General Manager

FLUIDONICS^{T.M.}

TECHNICAL
DATA

FLUID RESISTORS: SETS B-1 & B-2

EFFECTIVE JANUARY, 1965

CATALOG NUMBER: SET B-1 FD 1100-9-1211

SET B-2 FD 1100-8-1211

FUNCTION: Linear Pressure-Flow Restriction

OPERATING PRINCIPLE: Fully Developed Laminar Flow Channel

DIMENSIONAL DATA:	<u>L</u>	<u>W</u>	<u>H</u>
B-1 Series	2 1/2"	1/4"	1/8"
B-2 Series	2 1/2"	1/2"	1/8"

RESISTOR VALUES:

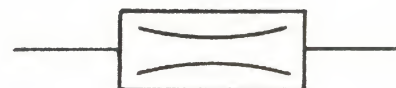
	<u>Set B-1 Values</u>		<u>Set B-2 Values</u>	
	<u>Lb Sec</u> <u>Ft⁵</u>	<u>Lb Sec</u> <u>In⁵</u>	<u>Lb Sec</u> <u>Ft⁵</u>	<u>Lb Sec</u> <u>In⁵</u>
Resistor A	100 x 10 ⁶	400	9 x 10 ⁶	36
Resistor B	60 x 10 ⁶	240	7 x 10 ⁶	28
Resistor C	45 x 10 ⁶	180	5 x 10 ⁶	20
Resistor D	35 x 10 ⁶	140	4 x 10 ⁶	16
Resistor E	30 x 10 ⁶	120	3 x 10 ⁶	12
Resistor F	20 x 10 ⁶	80	2 x 10 ⁶	8
Resistor G	10 x 10 ⁶	40	1 x 10 ⁶	4

NOTE: Accurate to within $\pm 10\%$ of marked value

PERFORMANCE:

Supply Pressure

Pressure-Flow Relationship is linear to within $\pm 5\%$ up to a pressure differential of 5 psig. See Flow-Pressure Curve.



FLUID RESISTOR

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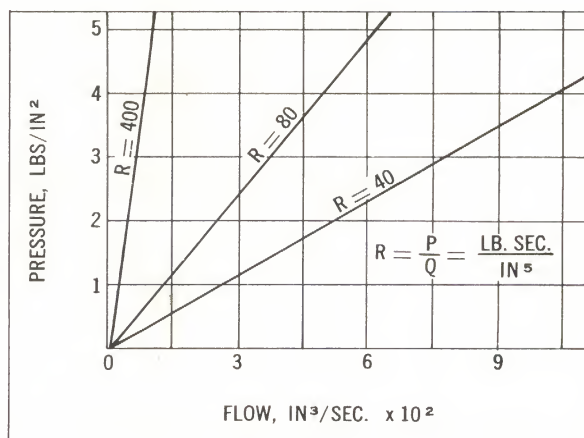
ADVANTAGES:

- # Standardized
- # Rugged
- # Economical
- # Precision Manufacturing
- # Reliable
- # Immediate Availability
- # Breadboard Conversion Capability

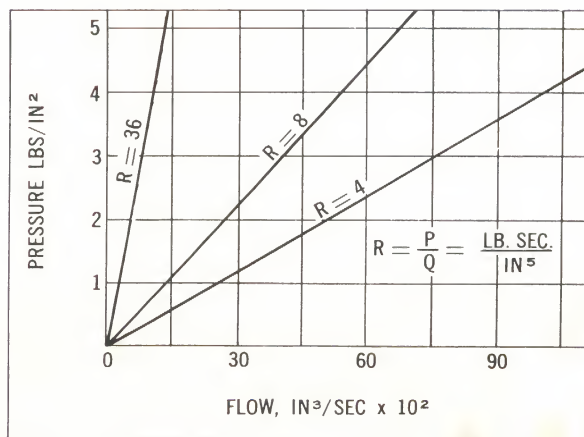
APPLICATIONS:

- Bleed Control
- Analog Computers
- R. C. Circuit

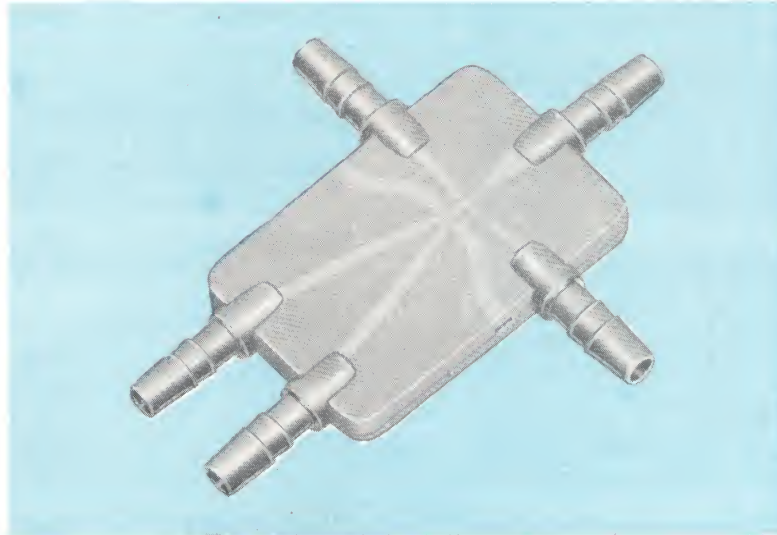
VARIATIONS: Other shapes and values of Flow Restrictors available on request.



SERIES B-1 PRESSURE DIFFERENTIAL vs. FLOW



SERIES B-2 PRESSURE DIFFERENTIAL vs. FLOW



BISTABLE LOAD INSENSITIVE

CATALOG NO.: FD 2212-2-1211.

FUNCTION: Provides Flip-Flop logic.

PRINCIPLE: This device operates on a single supply, two control inputs and two outputs.

Without an input, flow from the supply will be out either of two outputs. This flow, in a stable condition, will continue to flow out of that output until pressure is supplied to the input on the side of the device corresponding to the output. Output flow will then switch to the opposite leg and remain directed out that leg until a pressure is introduced to the input on that side of the device. Flow will then switch to the other output.

Note: Switching may also be accomplished by introducing a vacuum into the input on the side opposite the output flow.

LOAD INSENSITIVE: Increasing load (restriction) on the output increases pressure needed to switch outputs. As load is increased, supply will back up and out the vent. Even dead-ended, flow will dump out the vent rather than switch to the other output.

APPLICATIONS: Generally Bistables are used in both test circuits and in completed control systems. As a basic building block, Bistables are used in combination with other fluidic devices, to build simple and complex control systems providing automated operations.



Body Material:	Fotoceram
Connectors:	Brass 1/8" I.D. barbed
Dimensions:	Body — Length 1 1/2" Width 1" Thickness 5/16"

Connectors Protrude: 1/2"

Nozzle Throat Sizes—All nozzle throats are .010" x .040"

Supply Pressure: 20 psi maximum
0.1 psi minimum

Frequency Response: To 1000 cps.

Fan Out: Output of single device may be split to provide switching inputs of four (4) similar devices operating at identical supply pressures.

Supply Flow: See curve

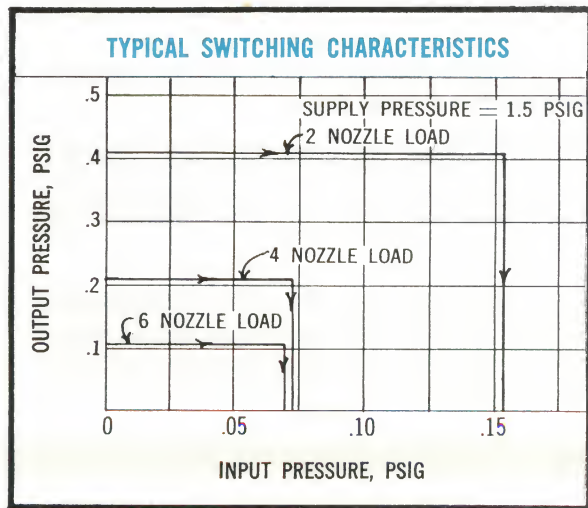
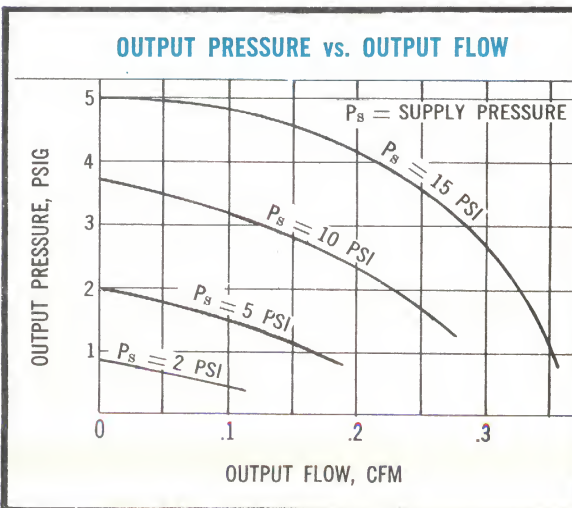
Switch Pressure: 5% to 15% of supply pressure. (See curve)

Switch Time: One millisecond

Output Pressure: 33% of supply pressure maximum. (See curve)

FOTOCERAM:

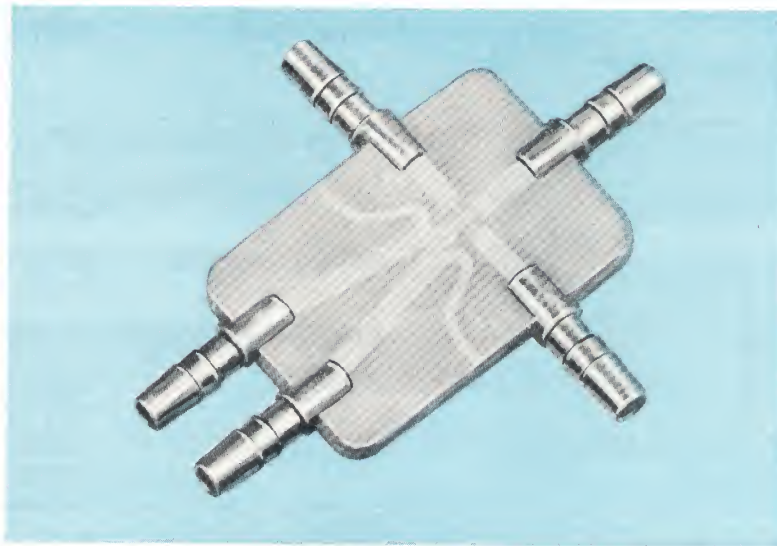
Fotoceram is one of the few materials available for production precision that has complete dimensional stability under the most adverse conditions including extremely high temperature, radioactivity, shock, abrasion and corrosion. It is resistant to almost all known acids and bases.



FLUIDONICS

T.M.

TECHNICAL
DATA



BISTABLE LOAD SENSITIVE

CATALOG NO.: FD 2211-2-1211.

FUNCTION: Provides Flip-Flop logic.

PRINCIPLE: This device operates on a single supply, two control inputs and two outputs.

Without an input, flow from the supply will be out either of two outputs. This flow, in a stable condition, will continue to flow out of that output until pressure is supplied to the input on the side of the device corresponding to the output. Output flow will then switch to the opposite leg and remain directed out that leg until a pressure is introduced to the input on that side of the device. Flow will then switch to the other output.

Note: Switching may also be accomplished by introducing a vacuum into the input on the side opposite the output flow.

LOAD SENSITIVE: Increasing load (restriction) on the output increases significantly the input pressure required to switch. If load is large enough, the flow will switch to the opposite leg. Flow will then continue out that leg until the restriction is relieved and pressure is introduced to the proper input. See curve for load pressure required to switch output.

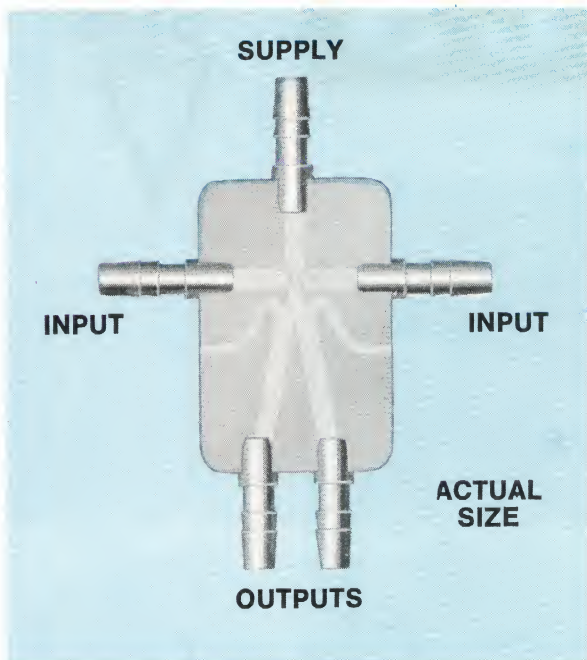
APPLICATIONS: Generally, Bistables are used in both test circuits and in completed control systems. As a basic building block, Bistables are used with other fluidic devices to build simple and complex control systems providing automated operations

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SPECIFICATIONS:

Body Material:	Fotoceram
Connectors:	Brass 1/8" I.D. barbed
Dimensions:	Body — Length 1 1/2" Width 1" Thickness 5/16"

Connectors Protrude: 1/2"

Nozzle Throat Sizes— All nozzle throats are .010" x .040"

Supply Pressure: 40 psi maximum
0.2 psi minimum

Frequency Response: To 1000 cps.

Fan Out: Output of single device may be split to provide switching inputs of four (4) similar devices operating at identical supply pressures.

Supply Flow: See curve

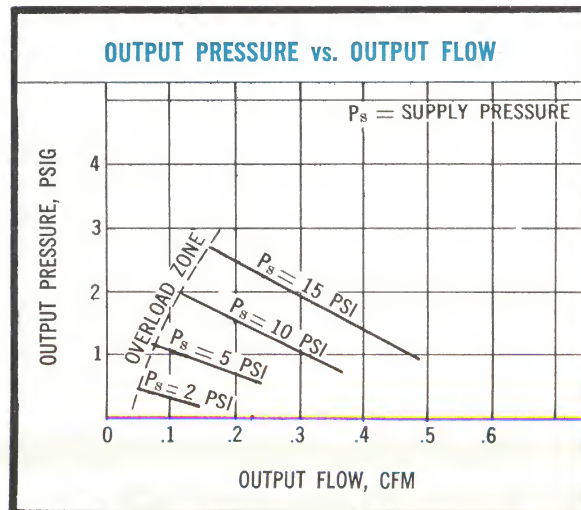
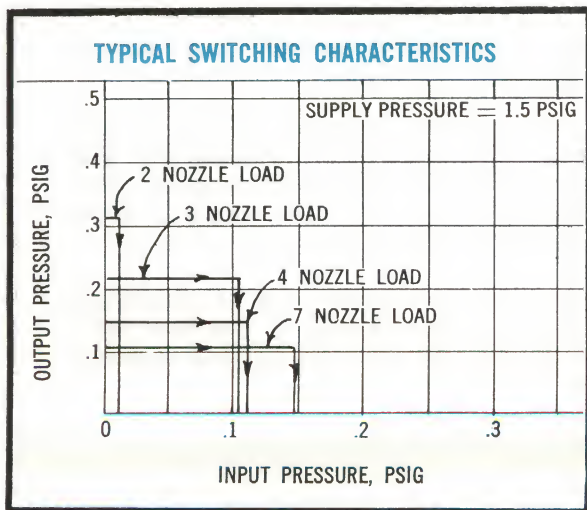
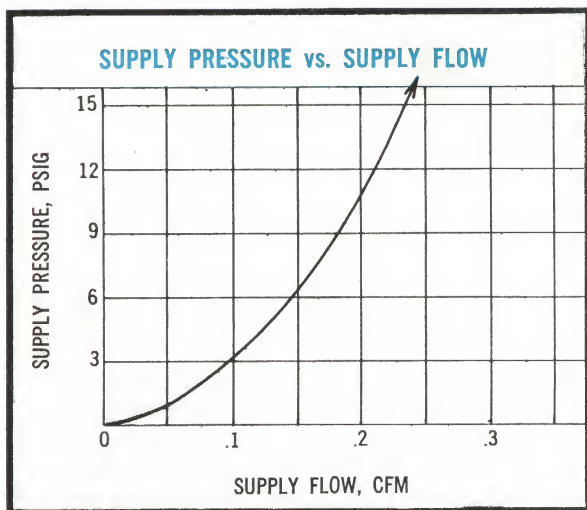
Switch Pressure: Dependent on output load.
(See curve)

Switch Time: One millisecond

Output Pressure: 25% of supply pressure maximum. (See curve)

FOTOCERAM:

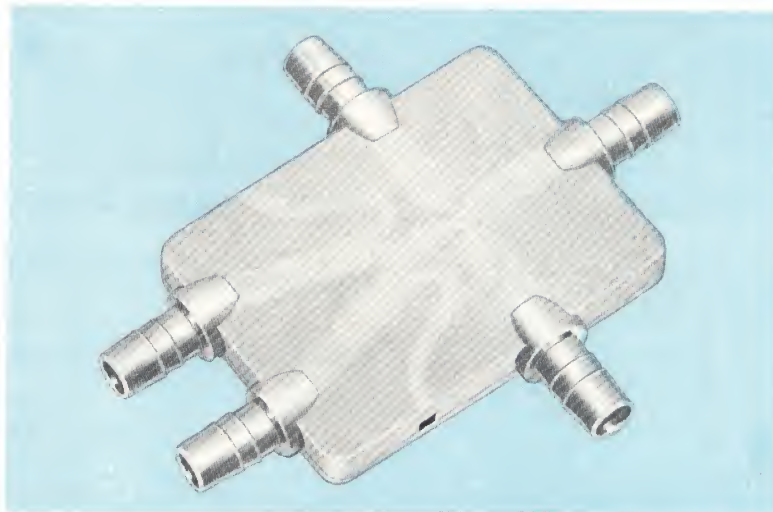
Fotoceram is one of the few materials available for production precision that has complete dimensional stability under the most adverse conditions including extremely high temperature, radioactivity, shock, abrasion and corrosion. It is resistant to almost all known acids and bases.



FLUIDONICS

T.M.

TECHNICAL
DATA



BISTABLE-2X

LOAD SENSITIVE

CATALOG NO.: FD 2211-3-1321.

FUNCTION: Provides Flip-Flop logic.

PRINCIPLE: This device operates on a single supply, two control inputs and two outputs.

Without an input, flow from the supply will be out either of two outputs. This flow, in a stable condition, will continue to flow out of that output until pressure is supplied to the input on the side of the device corresponding to the output. Output flow will then switch to the opposite leg and remain directed out that leg until a pressure is introduced to the input on that side of the device. Flow will then switch to the other output.

Note: Switching may also be accomplished by introducing a vacuum into the input on the side opposite the output flow.

LOAD SENSITIVE: Increasing load (restriction) on the output decreases significantly the input pressure required to switch. If load is large enough, the flow will switch to the opposite leg. Flow will then continue out that leg until the restriction is relieved and pressure is introduced to the proper input. See curve for load pressure required to switch output.

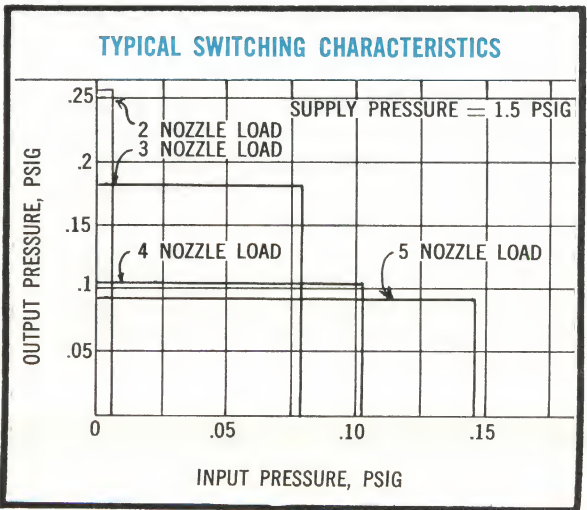
APPLICATIONS: Generally Bistables are used in both test circuits and in completed control systems. As a basic building block, Bistables are used in combination with other fluidic devices, to build simple and complex control systems providing automated operations.

FLUIDONICS

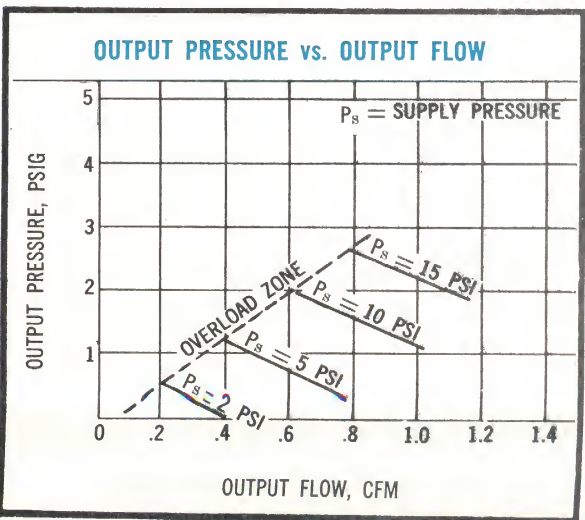
A DIVISION OF IMPERIAL-EASTMAN CORPORATION

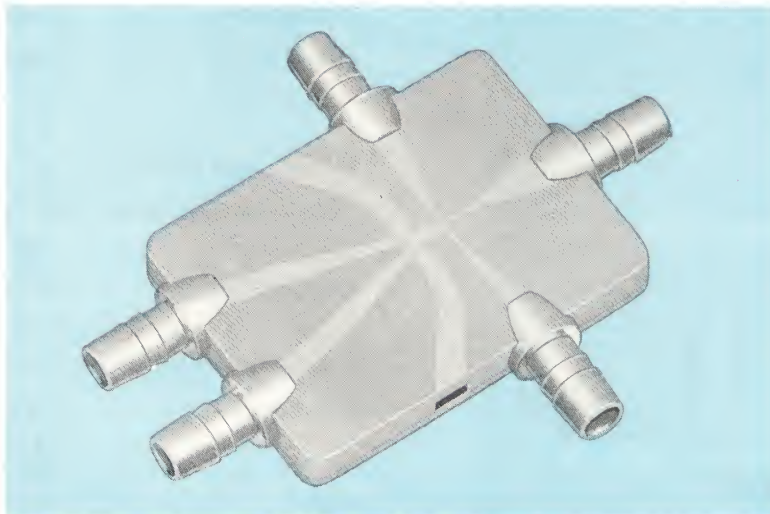
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BISTABLE-2X

LOAD INSENSITIVE

CATALOG NO.: FD 2212-3-1321.

FUNCTION: Provides Flip-Flop logic.

PRINCIPLE: This device operates on a single supply, two control inputs and two outputs.

Without an input, flow from the supply will be out either of two outputs. This flow, in a stable condition, will continue to flow out of that output until pressure is supplied to the input on the side of the device corresponding to the output. Output flow will then switch to the opposite leg and remain directed out that leg until a pressure is introduced to the input on that side of the device. Flow will then switch to the other output.

Note: Switching may also be accomplished by introducing a vacuum into the input on the side opposite the output flow.

LOAD INSENSITIVE: Increasing load (restriction) on the output increases pressure needed to switch outputs. As load is increased supply will back up and out the vent. Even dead-ended, flow will dump out the vent rather than switch to the other output.

APPLICATIONS: Generally Bistables are used in both test circuits and in completed control systems. As a basic building block, Bistables are used in combination with other fluidic devices, to build simple and complex control systems providing automated operations.



Connectors Protrude: 1/2"

Supply Pressure: 20 psi maximum
0.1 psi minimum

Frequency Response: To 1000 cps.

Fan Out: Output of single device may be split to provide switching inputs of four (4) similar devices operating at identical supply pressures.

Supply Flow: See curve

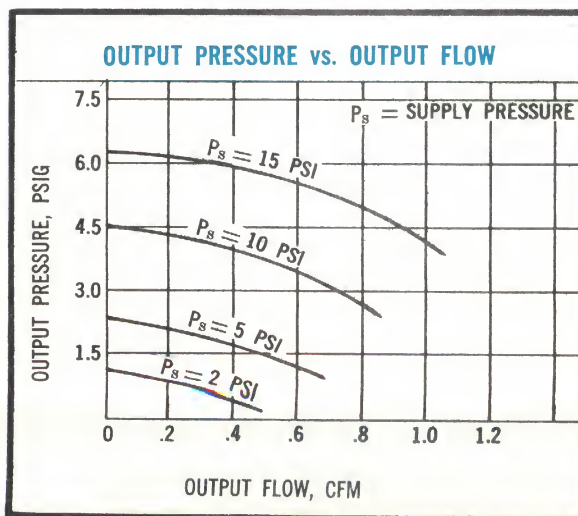
Switch Pressure: 5% to 15% of supply pressure. (See curve)

Switch Time: One millisecond

Output Pressure: 33% of supply pressure maximum. (See curve)

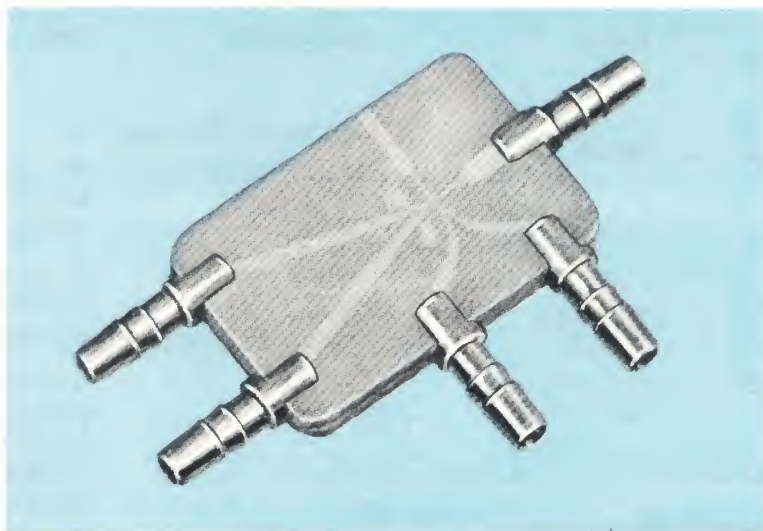
FOTOCERAM:

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TECHNICAL
DATA



OR/NOR GATE

CATALOG NO.: FD 2312-1-1211.

FUNCTION: To perform OR and NOR logic.

PRINCIPLE: This device operates on a single supply, either or both of two inputs. One of two outputs is the result.

To perform OR logic, "on" is connected to the OR output. The NOR output is vented to atmosphere. Pressure into either or both control inputs will direct the fluid out the OR (on). Absence of pressure, allows the fluid to flow out the NOR output (off).

To perform NOR logic, "on" is connected to the NOR output. Thus pressure into either input turns the control "off" and complete absence of input turns the device "on."

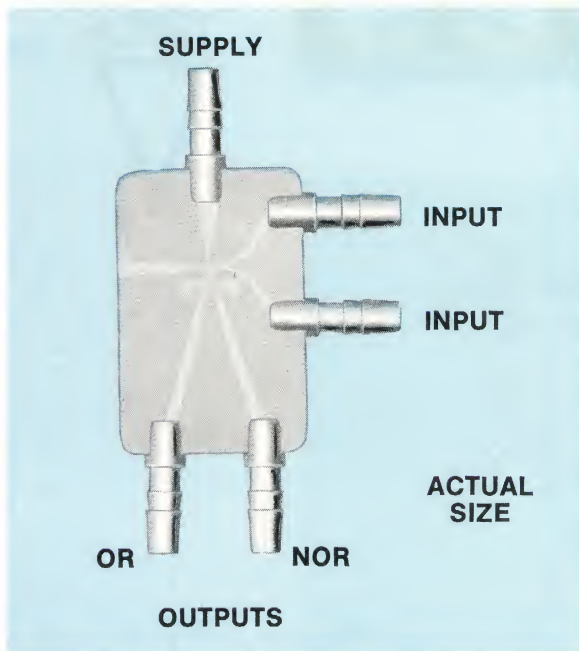
APPLICATIONS: The OR/NOR provides two basic logic functions. It is used in both test circuits and in control units, in combination with other fluidic devices to provide automated operations.

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SPECIFICATIONS:

Body Material:	Fotoceram
Connectors:	Brass, 1/8" I.D. barbed
Dimensions:	Body — Length 1 1/2"
	Width 1"
	Thickness 1/8"

Connectors Protrude: 1/2"

Nozzle Throat Sizes—All input nozzles and the supply nozzle are .010" x .040"

Supply Pressure: 20 psi maximum
1.5 psi minimum

Frequency Response: To 1000 cps.

Fan Out: Output of single device may be split to provide switching inputs of four (4) similar devices operating at identical supply pressures. See curve.

Supply Flow: See curve

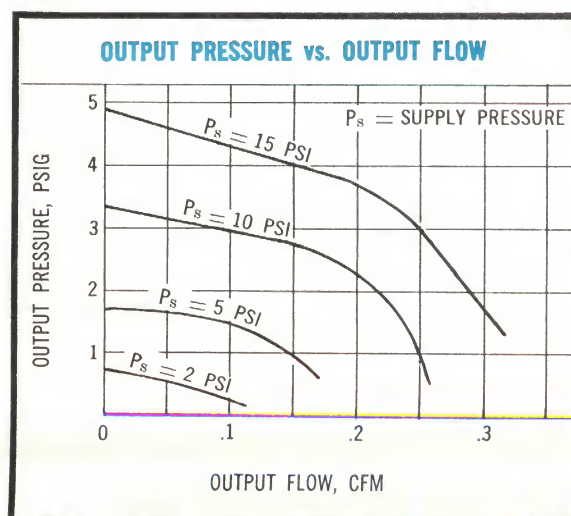
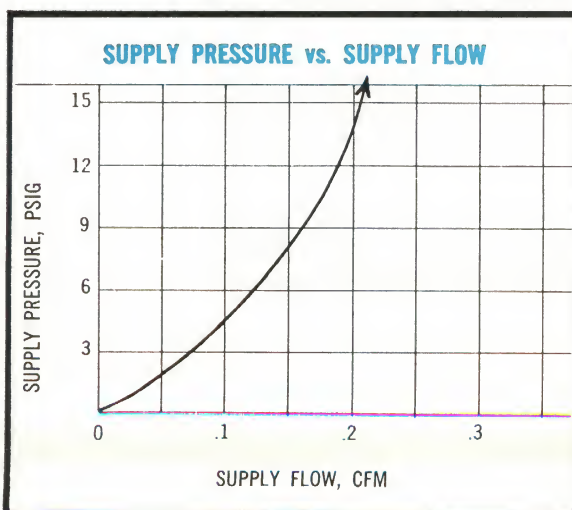
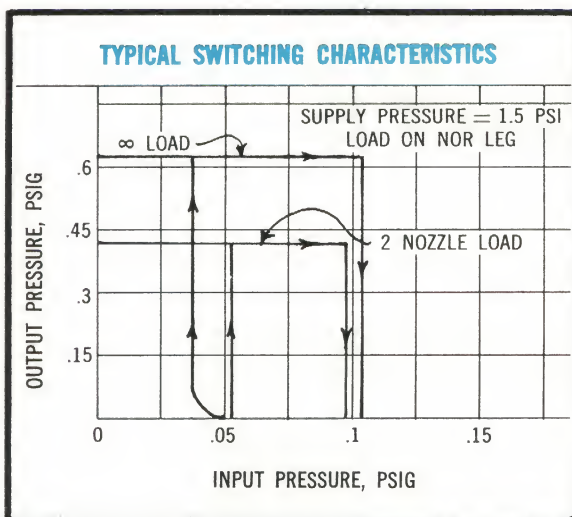
Switch Pressure: 5% to 15% of supply pressure (See curve). May be vacuum switched by closing the vent opposite the inputs.

Switch Time: One millisecond

Output Pressure: 35% of supply pressure maximum. (See curve)

FOTOCERAM:

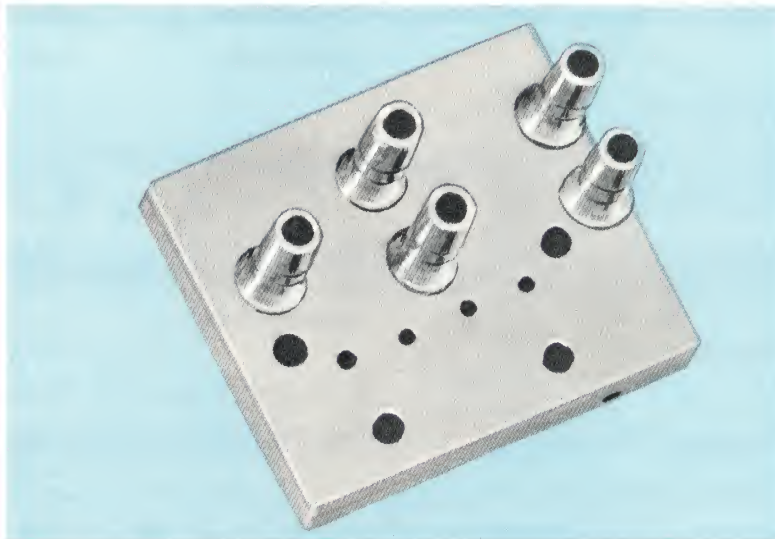
Fotoceram is one of the few materials available for production precision that has complete dimensional stability under the most adverse conditions including high temperature variances, radioactivity, shock, abrasion and corrosion. It is resistant to almost all known acids and bases.



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T.M.

**TECHNICAL
DATA**



AND/NAND GATE

CATALOG NO.:

FD 2412-2-2211.

FUNCTION:

Perform AND and NAND Logic.

PRINCIPLE:

This device operates on a single supply, two control inputs and one of two outputs.

To perform AND logic, "on" is connected to the AND output. The NAND output is generally vented to atmosphere. Pressure into both control inputs simultaneously is necessary to direct the fluid out the AND (on). Absence of pressure into either or both inputs, allows the fluid to flow out the NAND output (off).

To perform NAND logic, "on" is connected to the NAND output. Thus the device is normally "on." When pressure is introduced into both inputs simultaneously the output is turned "off."

To produce this effect, two inverters and one OR/NOR element are integrated within a Fotoceram monolithic block.

APPLICATIONS:

As a basic binary logic element, this device is used in test circuits and as an integral part of a control system.

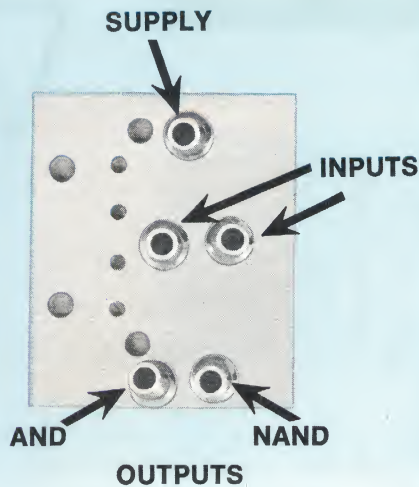
In combination with other fluidic devices, complete complex control systems are feasible.

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ACTUAL SIZE

SPECIFICATIONS:

Body Material:	Fotoceram
Connectors:	Brass, 1/8" I.D. barbed
Dimensions:	Body — Length 1 5/8"
	Width 1 1/4"
	Thickness 3/4"

Connectors Protrude: 1/2"

Nozzle Throat Sizes — Two .010" wide by .020" nozzle throats and one .010" wide by .040".

Supply Pressure: 20 psi maximum
1.5 psi minimum

Frequency Response: To 1000 cps.

Fan Out: Output of single device may be split to provide switching inputs of four (4) similar devices operating at identical supply pressures.

Supply Flow: See curve

Switch Pressure: 5% to 15% of supply pressure. (See curve)

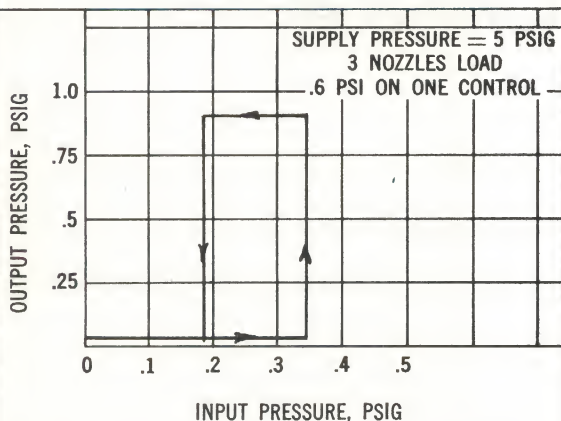
Switch Time: One millisecond

Output Pressure: 30% of supply pressure maximum. (See curve)

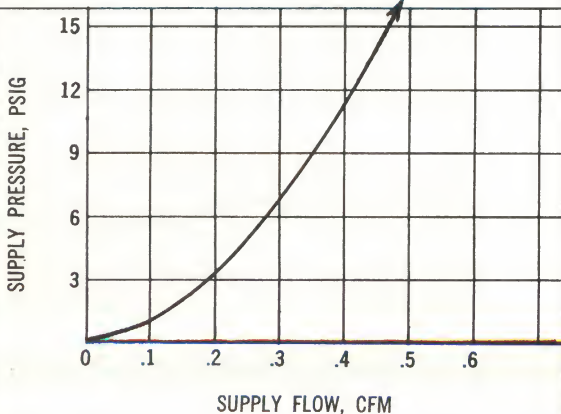
FOTOCERAM:

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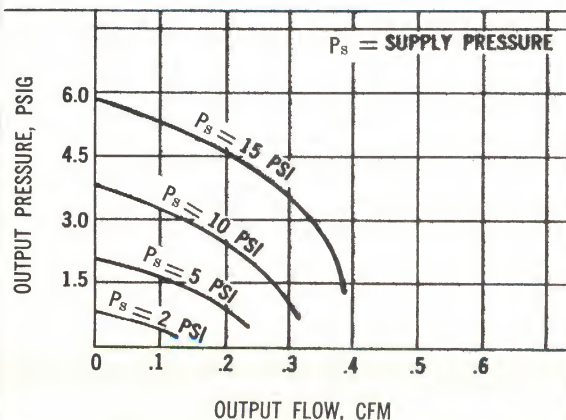
TYPICAL SWITCHING CHARACTERISTICS



SUPPLY PRESSURE vs. SUPPLY FLOW



OUTPUT PRESSURE vs. OUTPUT FLOW



FLUIDONICS

TECHNICAL
DATA

EFFECTIVE JANUARY, 1965

PROPORTIONAL DEVICES - 2X SIZE

FUNCTION: Proportional Amplification

OPERATING PRINCIPLE: Beam Deflection

PROPORTIONAL CATALOG NO. FD 2511-3-1321

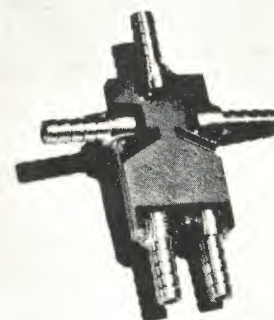
<u>PERFORMANCE:</u>	<u>NOM</u>	<u>MAX</u>	<u>MIN</u>
Power Nozzle Pressure	5 psi	-----	.1 psi
Power Nozzle Flow		See Curve	
Pressure Recovery	40% of supply pressure maximum	See Curve	
Pressure Gain	7 (max. when $\Delta P_c = .1 P_j$)	See Curve	
Frequency Response		Over 750 c. p. s.	
Other	Cannot be operated at dead head		

<u>DIMENSIONS:</u>	<u>L</u>	<u>W</u>	<u>H</u>
External	2 1/2"	1 1/2"	1/8"
Power Nozzle	.020" wide x .050" deep		
Control Nozzle	.030" wide x .050" deep		

CENTER DUMP PROPORTIONAL CATALOG NO. FD 2512-3-1321

<u>PERFORMANCE:</u>	<u>NOM</u>	<u>MAX</u>	<u>MIN</u>
Power Nozzle Pressure	5 psi	-----	.1 psi
Power Nozzle Flow		See Curve	
Pressure Recovery	55% of supply pressure maximum	See Curve	
Pressure Gain	6 (max. when $\Delta P_c = .1 P_j$)	See Curve	
Frequency Response		Over 750 c. p. s.	
Other	Can be operated at dead head		

<u>DIMENSIONS:</u>	<u>L</u>	<u>W</u>	<u>H</u>
External	3"	3"	1/8"
Power Nozzle	.020" wide x .050" deep		
Control Nozzle	.030" wide x .050" deep		



Proportional Silhouette



Center Dump Silhouette

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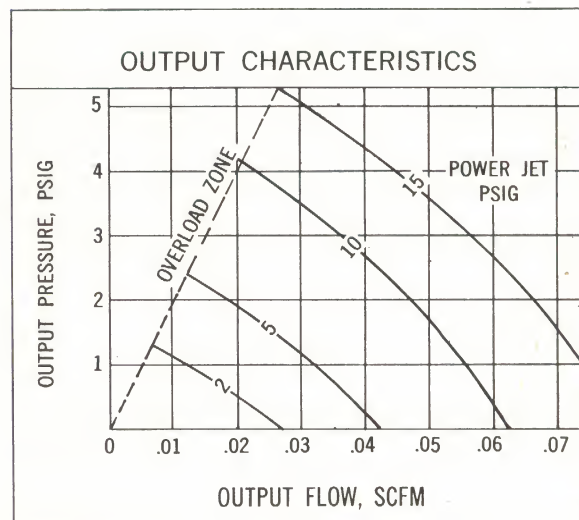
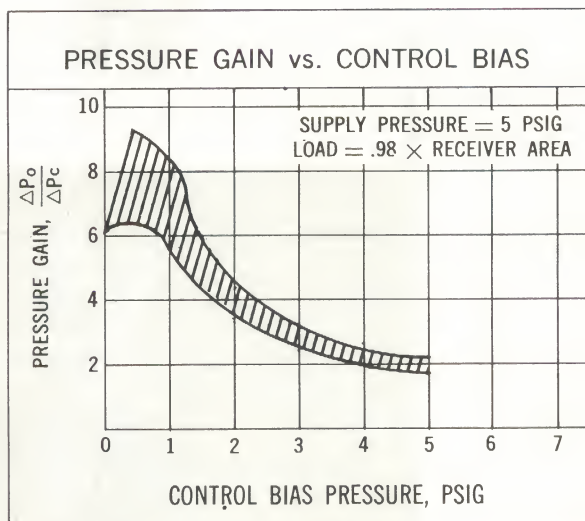
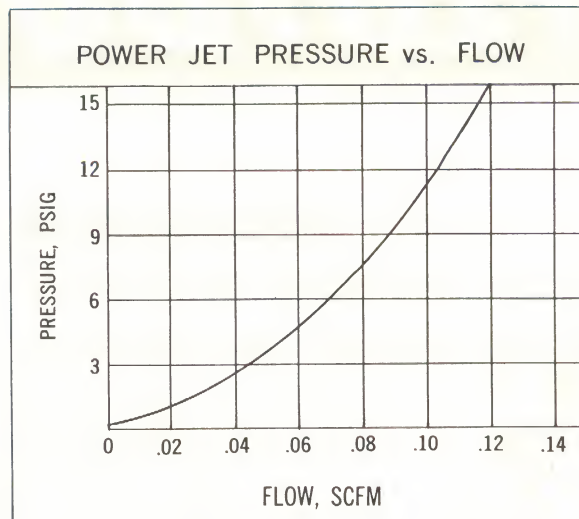
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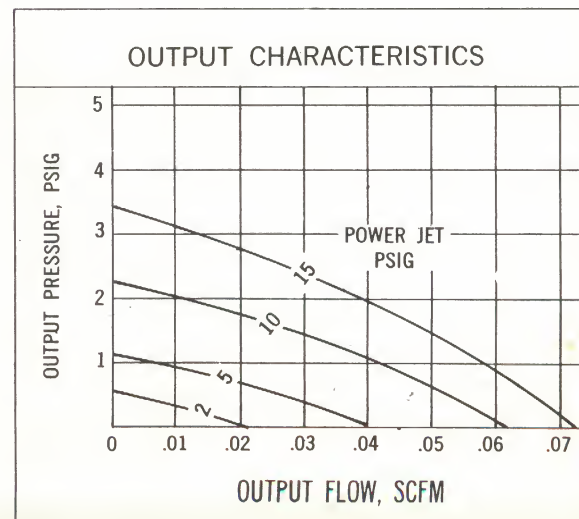
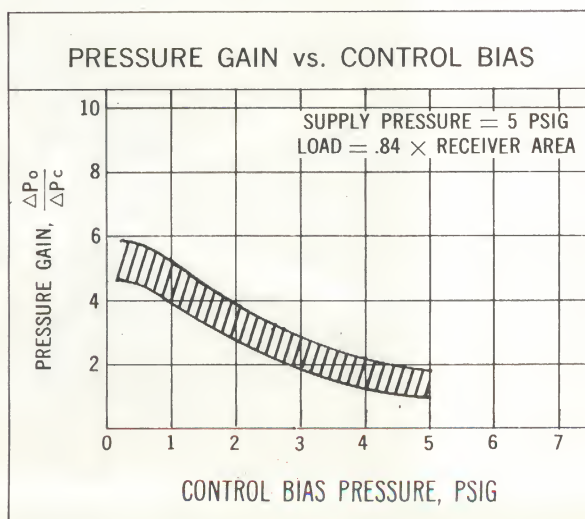
ADVANTAGES:

#

Standardized
Rugged
Economical
Precision Manufacturing
Reliable
Immediate Availability
Breadboard Conversion Capability



PROPORTIONAL — TYPICAL CURVES



CENTER DUMP — TYPICAL CURVES

EFFECTIVE JANUARY, 1965

PNEUMATIC TIMER

CATALOG NUMBER: FD 2612-2-1211

FUNCTION: The timer will deliver alternating pressure pulses. Pulse durations are independent and adjustable with needle valves.

OPERATING PRINCIPLE: Diaphragm actuated, vacuum switching of a bistable element

<u>DIMENSIONAL DATA:</u>	<u>L</u>	<u>W</u>	<u>H</u>
External	2 1/2"	1 5/8"	1"
Power Nozzle		.010"	.040"

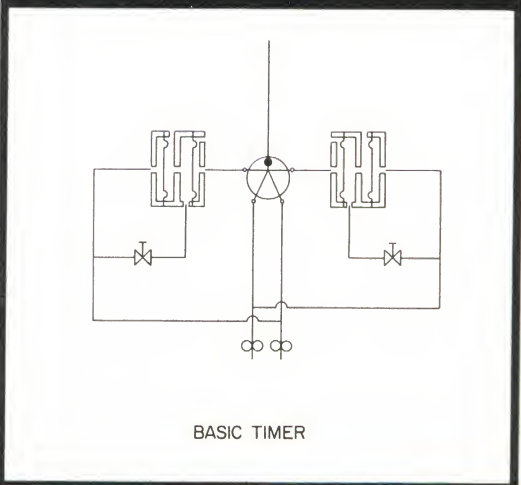
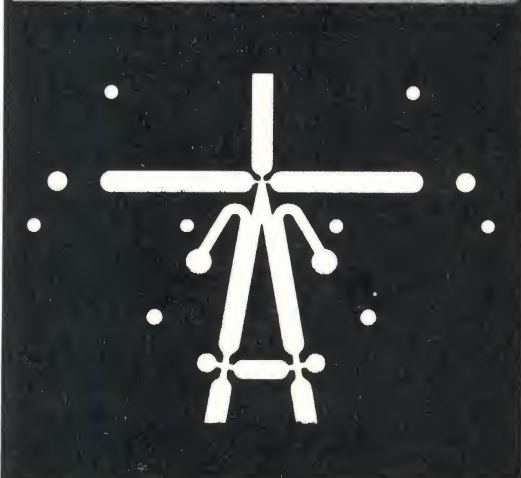
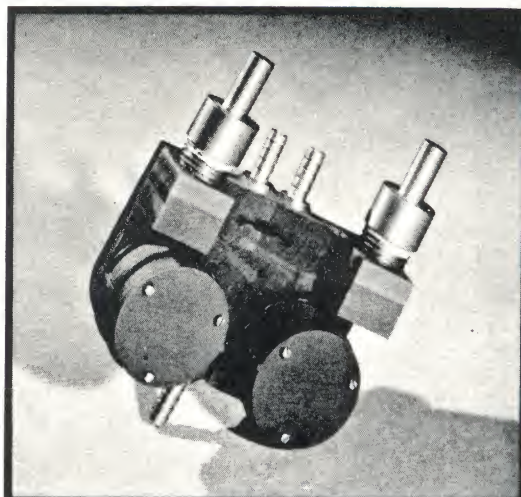
<u>PERFORMANCE:</u>	<u>NOM</u>	<u>MAX</u>	<u>MIN</u>
Power Nozzle Pressure	15 psi	25 psi	12 psi
Power Nozzle Flow	.22 scfm		
Max. Pressure Recovery	Approximately 10% of supply pressure when dead headed		
Accuracy	±10% from 1/4 to 10 seconds		
Other	Timing is affected by supply pressure variations		

ADVANTAGES:

#	Standardized
#	Rugged
#	Economical
#	Precision Manufacturing
#	Reliable
#	Immediate Availability
#	Breadboard Conversion Capability

APPLICATIONS:

Two step pneumatic timing
Analog to digital conversion

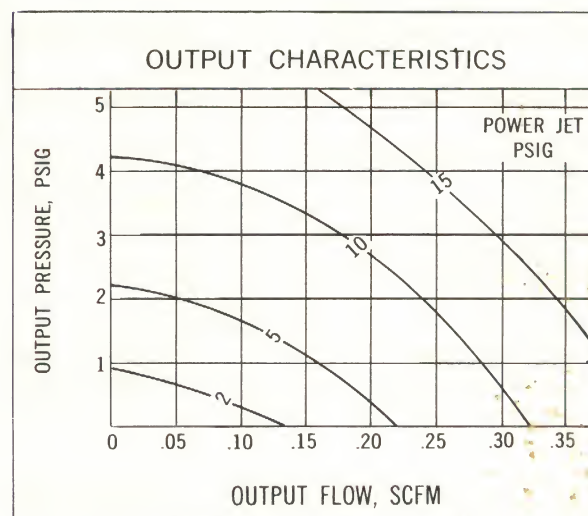
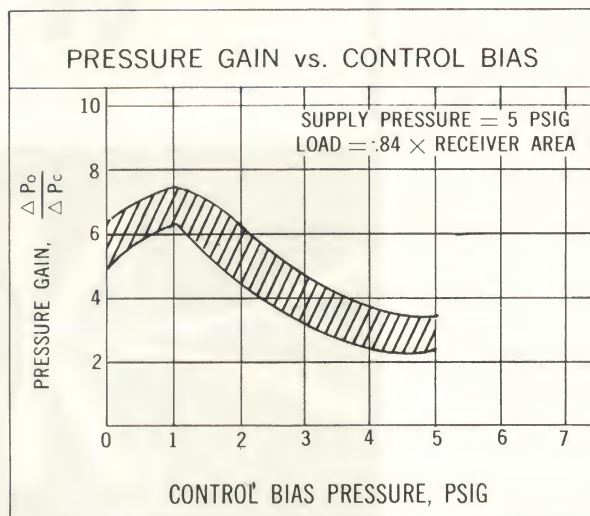
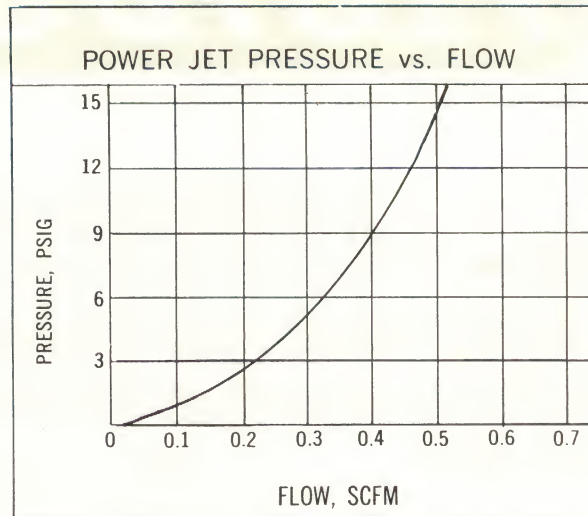


BASIC TIMER

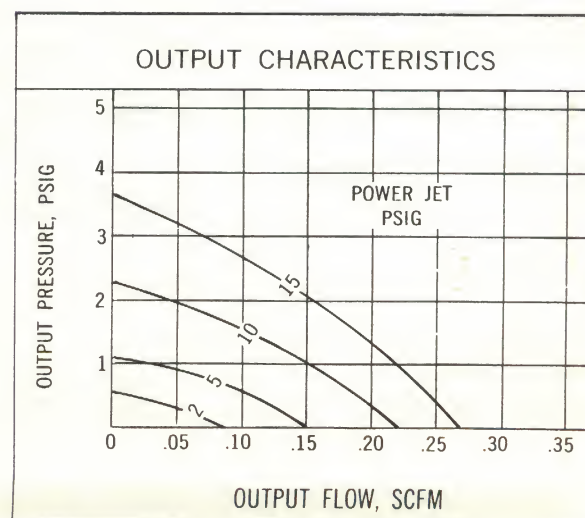
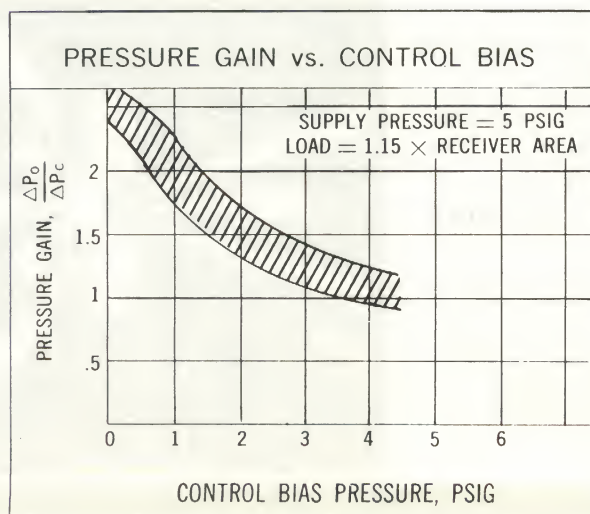


ADVANTAGES:

- # Standardized
- # Rugged
- # Economical
- # Precision Manufacturing
- # Reliable
- # Immediate Availability
- # Breadboard Conversion Capability



PROPORTIONAL — TYPICAL CURVES



CENTER DUMP — TYPICAL CURVES

EFFECTIVE JANUARY, 1965

PNEUMATIC TIMER

CATALOG NUMBER: FD 2612-2-1211

FUNCTION: The timer will deliver alternating pressure pulses. Pulse durations are independent and adjustable with needle valves.

OPERATING PRINCIPLE: Diaphragm actuated, vacuum switching of a bistable element

<u>DIMENSIONAL DATA:</u>	<u>L</u>	<u>W</u>	<u>H</u>
External	2 1/2"	1 5/8"	1"
Power Nozzle		.010"	.040"

<u>PERFORMANCE:</u>	<u>NOM</u>	<u>MAX</u>	<u>MIN</u>
Power Nozzle Pressure	15 psi	25 psi	12 psi

Power Nozzle Flow .22 scfm

Max. Pressure Recovery Approximately 10% of supply pressure when dead headed

Accuracy $\pm 10\%$ from 1/4 to 10 seconds

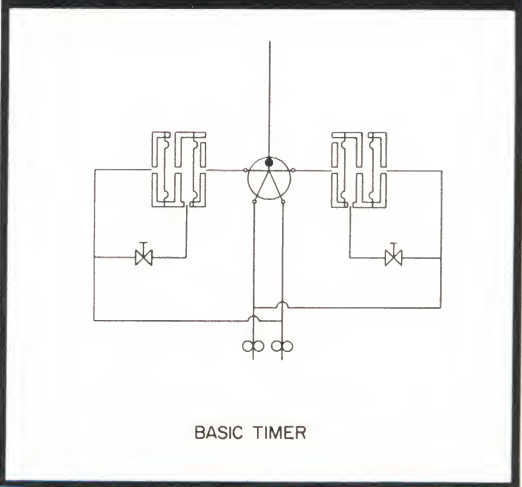
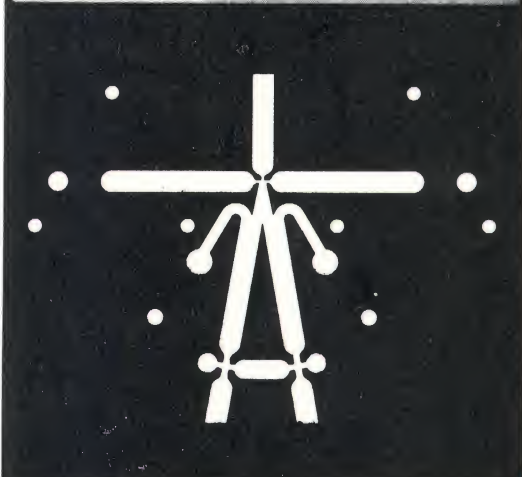
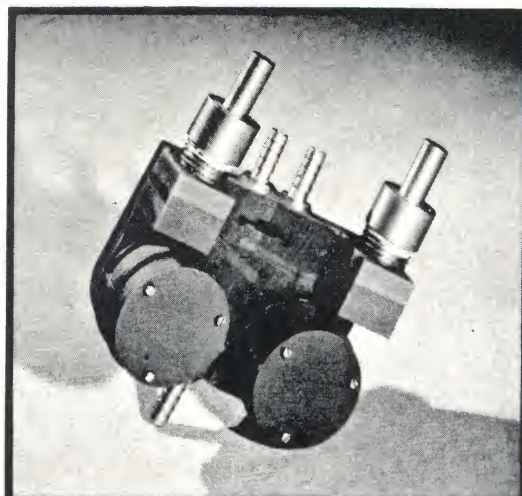
Other Timing is affected by supply pressure variations

ADVANTAGES:

#	Standardized
#	Rugged
#	Economical
#	Precision Manufacturing
#	Reliable
#	Immediate Availability
#	Breadboard Conversion Capability

APPLICATIONS:

Two step pneumatic timing
Analog to digital conversion



SCHMITT TRIGGER

CATALOG NUMBER: FD 2812-2-2211

FUNCTION: Adjustable switch pressure with negligible hysteresis loop

OPERATING PRINCIPLE: Jet interaction and wall attachment

DIMENSIONAL DATA:

	L	W	H
External	2 1/4"	1 1/4"	3/8"
Power Nozzles	3 .010" wide x .025" deep		
	2 .010" wide x .040" deep		

PERFORMANCE:

	NOM	MAX	MIN
Power Nozzle Pressure "A"	1.0 psig	2.0 psig	0.5 psig
Power Nozzle Pressure "B"	3.0 psig	6.0 psig	1.5 psig
Power Nozzle Flow "A" and "B"	(See Curve)		
Switch Pressure	Adjustable from 1% to 35% of Power Nozzle Pressure "A"		
Power Nozzle Pressure Ratio of "A" and "B"	Use 1:3 for low frequency and 1:1 for high frequency		
Pressure Recovery	35% of Supply Pressure "B", Maximum when Deadheaded		
Frequency Response	Over 100 c. p. s.		

ADVANTAGES:

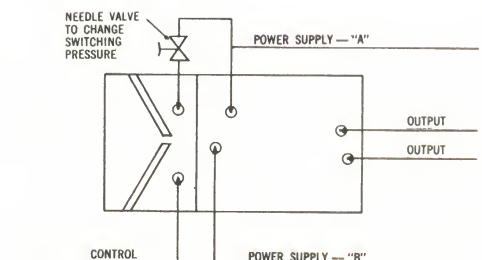
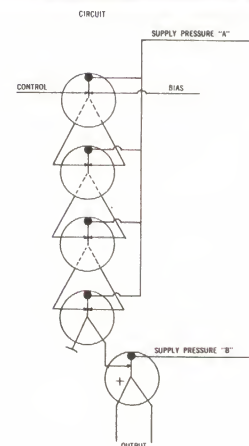
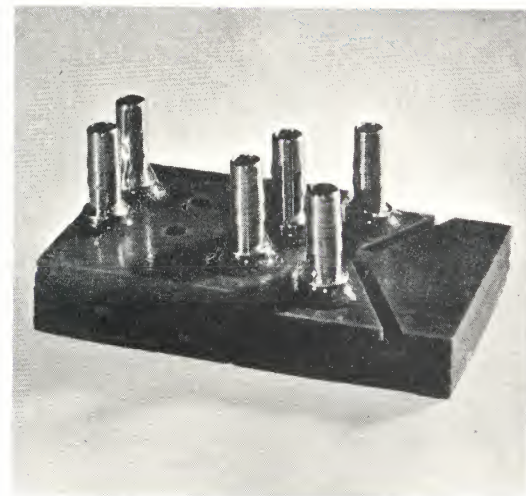
- # Standardized
- # Rugged
- # Economical
- # Precision Manufacturing
- # Reliable
- # Immediate Availability
- # Breadboard Conversion Capability

APPLICATIONS:

- Liquid Level Detector
- Proximity Switch
- Pneumatic Eye
- Low Pressure Detection

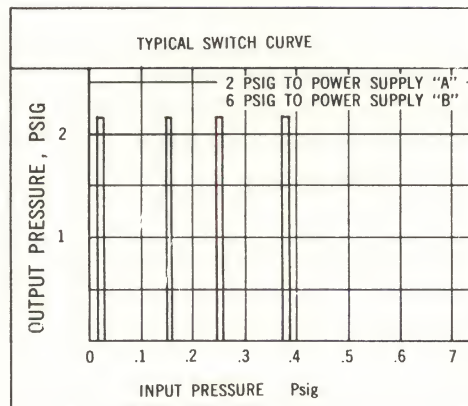
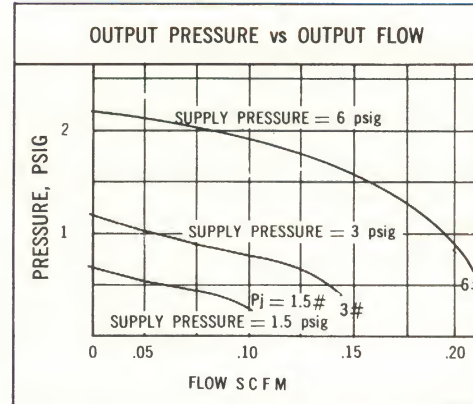
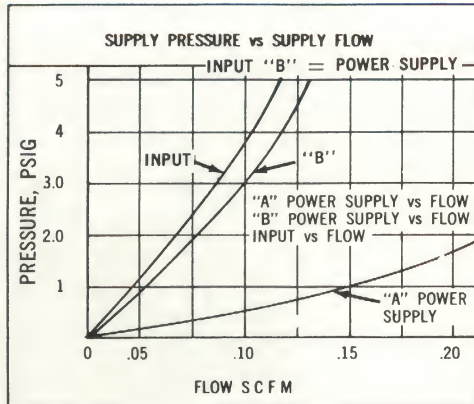
INTEGRATED CIRCUITS

CORNING Fluidic Devices are primarily used in breadboard models of control and logic circuits. Corning is ready to convert your breadboards into integrated circuit modules which provide you the same reproducibility and rugged reliability inherent in the individual components.





PERFORMANCE DATA



SUPPLEMENTARY APPLICATION NOTES

A Schmitt Trigger is a pneumatic switch with an adjustable trigger point; therefore, it is an analog to digital device. It utilizes three proportional amplifiers, a flip-flop, and a NOR gate in one monolithic block consisting of five plates.

ADVANTAGES

1. Negligible hysteresis — less than 0.01 psi
2. Wide range of adjustment — 1% to 35% of power nozzle "A" pressure
3. Load insensitive output — can deadend either output or both
4. High frequency response — over 100 c.p.s. with no perceptible change in hysteresis

OPERATION

Switching is primarily performed by the flip-flop. The gain block consisting of three proportional amplifiers is output connected to the two control inputs of the flip-flop and perform the function of amplifying the change in control input (hysteresis) needed to

switch the flip-flop. The input proportional amplifier is then biased by a control signal provided by a needle valve connected externally to the power input. Adjustment of the needle valve to increase the bias flow increases the pressure required at the control port to switch the device.

The output of the flip-flop is connected to a NOR gate to provide a switch gain and to provide a discrete output that is load insensitive.

APPLICATIONS

Pressure Switch — for alarming or switching on high or low pressure, liquid level control, or detecting higher or lower of two signals.

Proximity Switch — for detecting depth of travel of a work tool, edge alignment on moving belts or webs, or positioning small parts or tools.

Pneumatic Eye — for counting small parts

COUNTERS

CATALOG NUMBERS: One Stage — FD 2712-2-3211
Four Stage — FD 2722-2-3211

FUNCTION/TYPE: Binary Counter - Frequency Divider

OPERATING PRINCIPLE: Wall Attachment

DIMENSIONAL DATA:	L	W	H
External			
One Stage	3"	1"	$\frac{3}{8}$ "
Four Stage	$6\frac{3}{8}$ "	$2\frac{1}{4}$ "	$\frac{7}{8}$ "
Power Nozzle			
One Stage		.010"	.040"
Four Stage		.010"	.040"

SET UP INFORMATION*:	NOM	MAX	MIN
Power Nozzle Pressure	5 psig	7 psig	3 psig
Power Nozzle Flow		See Curve	
Reset Switch Pressure		See Curve	
Recovery Pressure	30% of Supply Pressure Fan out of 1		
Switch Pressure	25% of power jet (must be a step function or a pulse)		
Frequency Response	1000 c. p. s.		

*Input signal should be 20% of P_i with no tees between driver and counter to permit fast rise time.

ADVANTAGES:

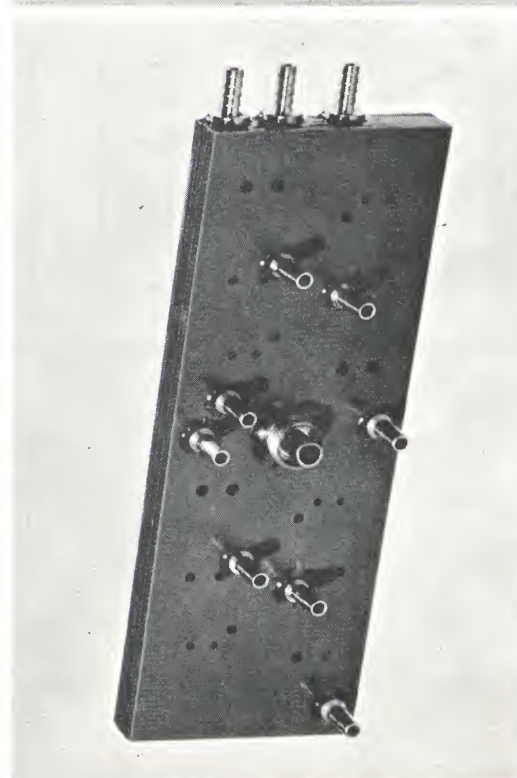
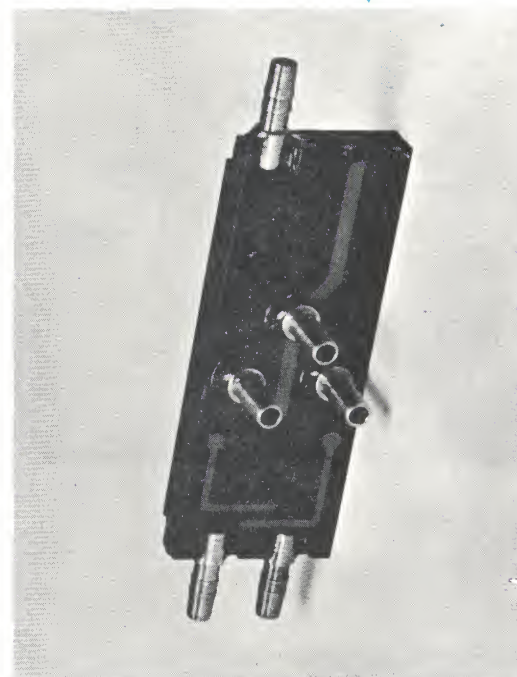
#	Standardized
#	Rugged
#	Economical
#	Precision Manufacturing
#	Reliable
#	Immediate Availability
#	Breadboard Conversion Capability
#	Reset Switch

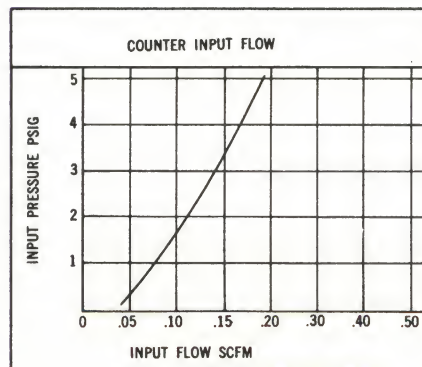
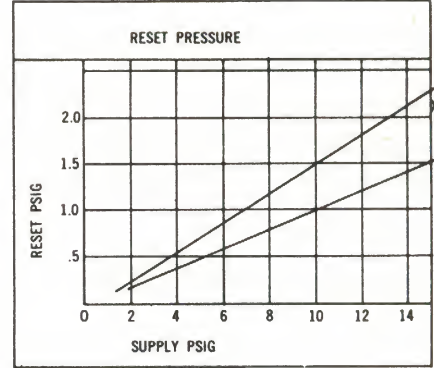
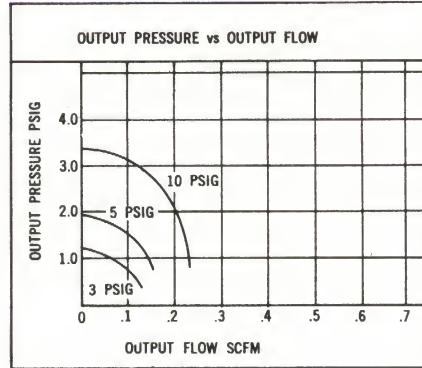
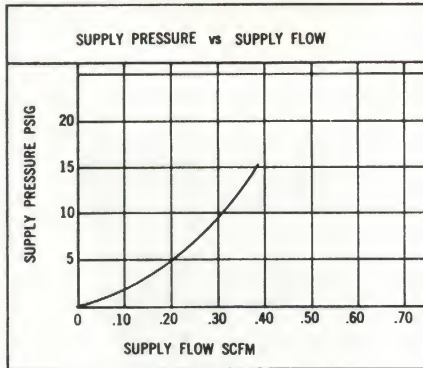
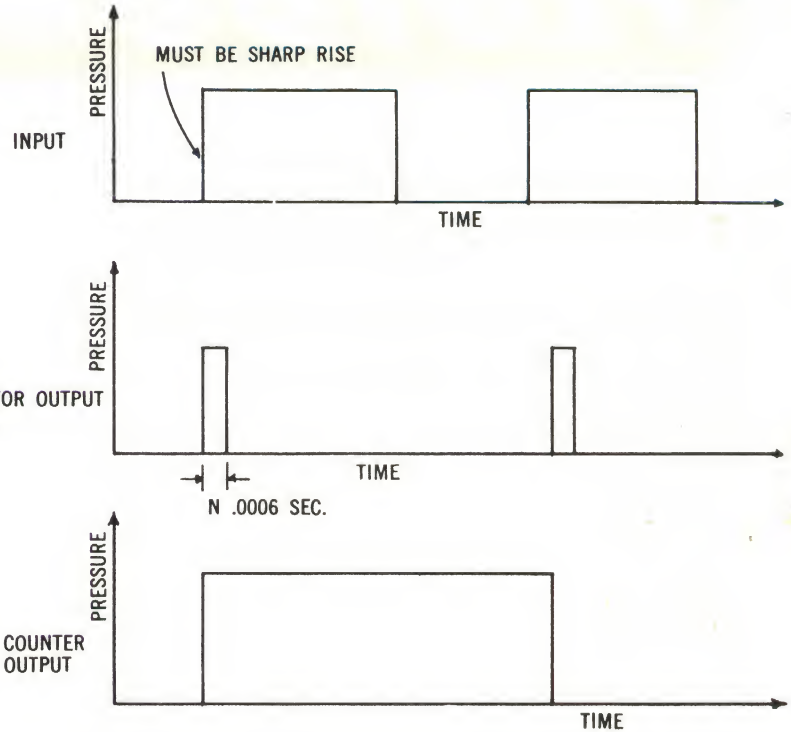
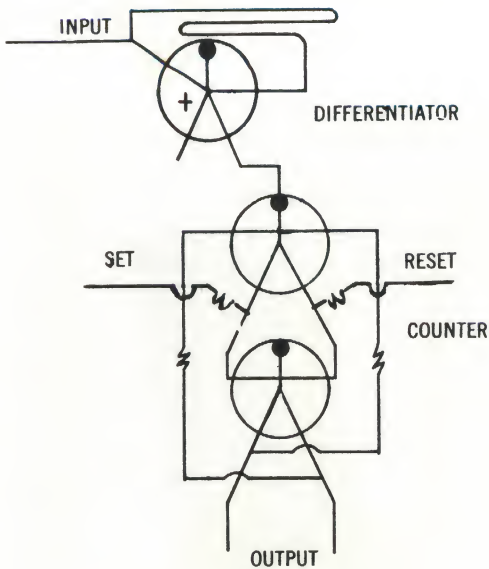
APPLICATIONS:

Time sequence controls chronograph etc.

INTEGRATED CIRCUITS

CORNING Fluidic Devices are primarily used in breadboard models of control and logic circuits. Corning is ready to convert your breadboards into integrated circuit modules which provide you the same reproducibility and rugged reliability inherent in the individual components.





WORKING RANGE

3 to 7 psig supply

1 nozzle load

Input signal of 20% P_i

With no tees between driver and counters so that the signal has a fast rise time.

All curves apply to both One Stage and Four Stage Counters except Flow versus Pressure where a multiplier of four should be used when applying information to Four Stage Counter.

FLUIDONICS^{T.M.}

TECHNICAL
DATA

PRESSURE TO ELECTRIC SWITCH

CATALOG NUMBER: FD 2812-2-1211

FUNCTION: Convert fluid pressure to electrical output

EFFECTIVE SEPTEMBER, 1965

OPERATING PRINCIPLE: Diaphragm displacement

ELECTRICAL OUTPUT: SPST Normally open

CONTACT RATINGS:

5 Amps at 250 V AC
10 Amps at 125 V AC

MATERIALS: Rubber diaphragm mounted in ceramic plates

SWITCH POINT: Factory set at $\frac{1}{4}$ psig

FREQUENCY RESPONSE: 1000 c. p. s.

INTERNAL VOLUME: Approx. $\frac{1}{2}$ cu. in. including fitting

SIZE: 1" dia. x 1" high

OTHER: May be Overloaded to 25 psig

APPLICATIONS:

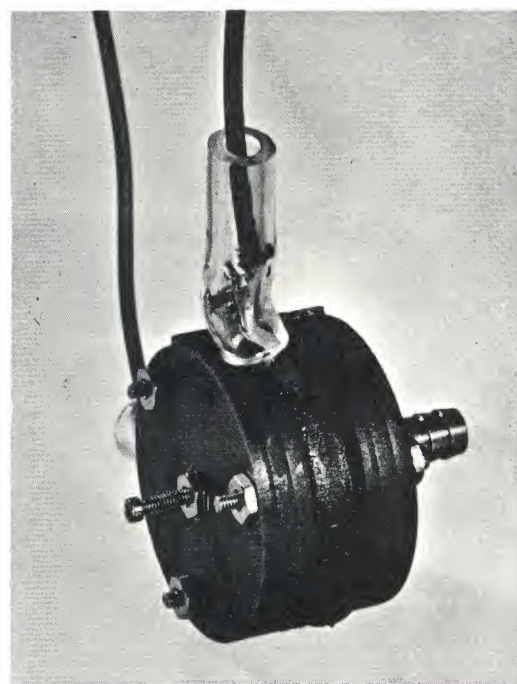
Event Readout
Trouble Shooting
Pressure Switch — (Combined with Standard Fluid Device)

INTEGRATED CIRCUITS

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ADVANTAGES:

Standardized
Rugged
Economical
Precision Manufacturing
Reliable
Immediate Availability



FLUIDONICS

A DIVISION OF IMPERIAL-EASTMAN CORPORATION

6300 WEST HOWARD STREET, CHICAGO, ILLINOIS 60648

FORM No. 6010

EXCLUSIVE DISTRIBUTOR FOR CORNING® PURE FLUID DEVICES

PRINTED IN U.S.A.

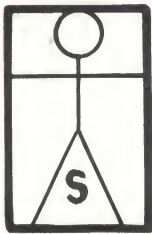
FLUIDONICS^{T.M.}

SYMBOLS

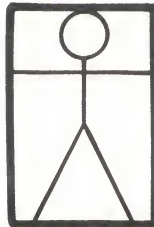
The Fluidonic Division of the Imperial-Eastman Corporation, has adopted the following symbols for fluidic circuitry drawing in the absence of inducting standards.



BISTABLE (Flip-Flop)

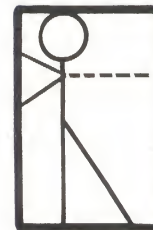


Sensitive



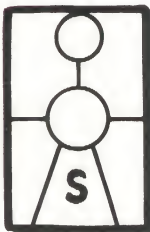
Insensitive

OR/NOR

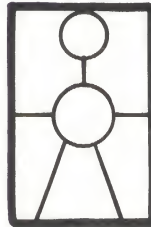


← Vent Optional

PROPORTIONAL

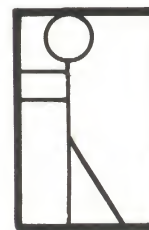


Sensitive



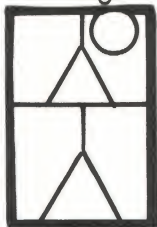
Insensitive

AND/NAND

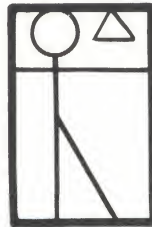


BINARY COUNTER

1 Stage



SCHMITT TRIGGER



VORTEX

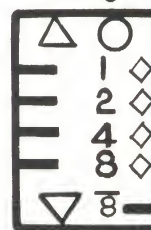


VARIABLE OSCILLATOR



BINARY COUNTER

4 Stage



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PRINTED IN U.S.A.

FLUIDIC SUMMING JUNCTION

EFFECTIVE FEBRUARY, 1966

CATALOG NUMBER: FD2522-2-3211

FUNCTION: General — The CORNING® Fluidic Summing Junction will provide the sum of two separate differential signals in one differential output.

OPERATING PRINCIPLE: Beam deflection

DIMENSIONAL DATA:	L	W	H
External	1½"	1"	¾"
Power Nozzles (2)		.010"	.025"
Control Nozzle		.015"	.025"

PERFORMANCE:	NOM	MAX	MIN
Power Nozzle Pressure	5 psig	15 psig	1.0 psig
Power Nozzle Flow	.11 scfm	(See Curve)	
Pressure Recovery		(30% See Curve)	
Pressure Gain		Over 2 from each set of inputs	
Frequency Response		Over 100 cps	

ADVANTAGES:

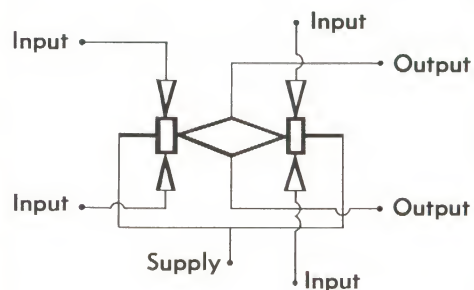
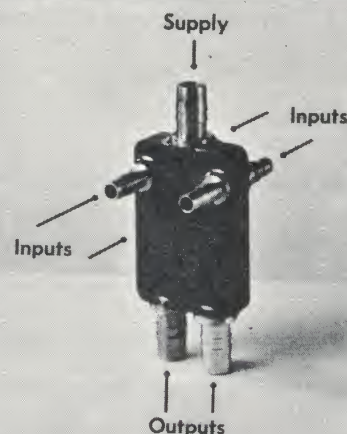
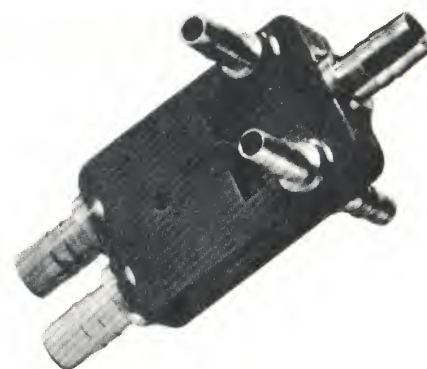
- # Standardized
- # Rugged
- # Economical
- # Precision Manufacturing
- # Reliable
- # Immediate Availability

APPLICATIONS:

- Digital/Digital Signal Comparison and Shaping
- Analog/Analog Signal Comparison and Shaping
- Digital/Analog Signal Comparison and Shaping

INTEGRATED CIRCUITS

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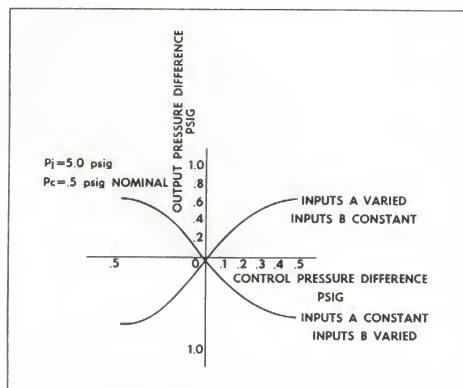


Summing Junction Schematic

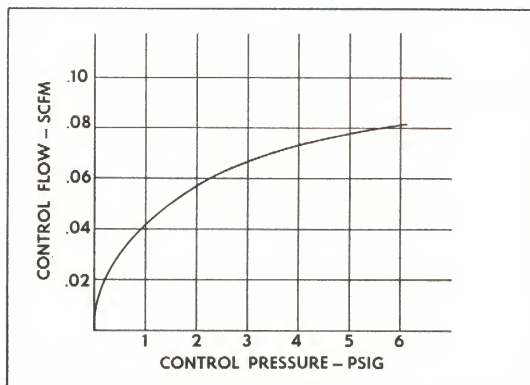


PERFORMANCE DATA

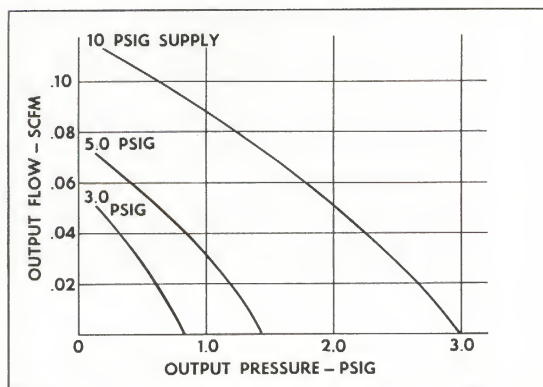
TYPICAL PERFORMANCE CURVE



PRESSURE vs FLOW of SUMMING JUNCTION CONTROL



PRESSURE vs FLOW of SUMMING JUNCTION OUTPUT



PRESSURE vs FLOW of SUMMING JUNCTION POWER NOZZLE

